

Appendix K – Cost-Benefit Analysis Methodology and Assumptions

The material below is extracted from the Regulatory Impact Analysis /Cost-Benefit Analysis prepared for the planning rule (USDA Forest Service 2011a).

Annual costs are estimated separately for years during which units are engaged in plan revision and years engaged in plan maintenance/amendment. Costs are then aggregated for all years (i.e., 15-year planning cycle) and all management units to estimate total planning costs. Over a 15-year planning cycle, it is assumed that management units will be engaged in plan revision for 3 to 4 years under Alternative A and Modified Alternative A and 5 years under Alternative B (current rule procedures), implying that plan maintenance or amendment will be occurring for the remaining 11 to 12 and 10 years, respectively. There remains some uncertainty regarding projected time and corresponding resources needed to complete plan revisions under the action alternatives.

It is also assumed that approximately 120 management units will at least initiate plan revision over the next 15 years (2012 through 2026). Total costs are assumed to cover activities directly related to planning and planning-related monitoring at the unit and regional office levels, as well as indirect or overhead (i.e., add-on or cost pools) activities to support planning activities. Costs do not include project-level activities (project and alternative development, NEPA analysis, etc.). Costs associated with planning activities at national offices and research stations are assumed to remain relatively constant across alternatives and therefore are not included in total cost estimates. Total costs (in 2009 dollars) are estimated for a 15-year planning cycle and then annualized assuming a 3 percent and 7 percent discount rate in accordance with Office of Management and Budget Circular A-4 (USOMB, 2003).

Cost Assumptions: Alternatives A, Modified Alternative A and Alternative B (No Action)

Estimates of planning and monitoring costs during plan revision years—as well as distributions of costs across key planning activities (e.g., assessment, analysis, appeal resolution, etc.) under Alternative B (current rule procedures)—are based initially on past cost estimates for plan revision under current rule procedures (USDA Forest Service 2007b) and then adjusted to reflect recent information and data regarding Forest Service paid expenditures (USDA Forest Service 2010a) and Forest Service budget allocations for planning and monitoring activities (USDA Forest Service 2010b, 2010c), as represented by Agency budget line items for planning (NFPN) and monitoring (NFIM) for 1996 to 2010.

Costs during plan maintenance periods, including plan amendment activities, are not available from past planning rule analyses, so historical expenditures and funding allocations (USDA Forest Service 2010a, 2010c) were examined to help derive planning costs during maintenance periods. Historical data suggest that annual expenditures per management unit associated with the non-monitoring planning activities (budget line item

NFPN) during maintenance years are about 30 percent of annual expenditures during periods of revision. Based on final cost estimates for this analysis, average annual costs associated with non-monitoring planning activities for plan maintenance are approximately 25 percent and 35 percent of non-monitoring planning activities during plan revision for alternatives A and B respectively. Additional details about cost assumptions and estimation for key activity categories are noted below:

Collaboration

Costs for collaboration are assumed to cover all collaboration activities and traditional public meetings, except activities related to public comments and content analysis for complying with NEPA and NFMA formal notification and comment solicitation requirements (those costs are included within the Analysis/Revision section). The costs for Alternative B (current rule procedures) during periods of revision are based on the cost of traditional public meetings and minimal amounts of additional collaboration; costs during maintenance periods are assumed to be negligible (zero costs) relative to other planning expenses. Costs for collaboration under Alternative A and Modified Alternative A include all costs under Alternative B (current rule procedures) and also include estimates of expenses for additional collaboration involvement, training, facilitation, tribal involvement, facilities, and travel (USDA Forest Service 2010g). Collaboration costs account for 21 percent of plan revision costs under Alternative A, which is slightly lower though still similar to the 24 percent estimated for the 2008 planning rule (USDA Forest Service 2007b). Collaboration accounts for 5 percent of projected costs during plan maintenance periods under Alternative A. Collaboration is projected to account for a substantially lower percentage of costs under the 1982 rule procedures (3 percent).

Science Support

Costs for science support include expenses for consultations and other activities to help take into account best science and provide documentation in assessment reports, plan decision documents, and monitoring evaluation reports. Science support costs under current rule procedures and Alternative A are approximately 3 percent and 4 percent of plan revision costs respectively, consistent with percentages described in previous assessments of planning rule costs (USDA Forest Service 2002a, 2007b). Costs decrease to less than 1 percent of costs during plan maintenance periods under both alternatives.. Modified Alternative A will limit the documentation for best available science to inform the assessment, the plan approval, and the design of the monitoring program instead of in every assessment report, plan decision document and monitoring evaluation report. Cost for science support under Modified Alternative A is estimated to be 7 % less than Alternative A.

Assessments

Assessment costs (pre-notice of intent) include activities related to a number of pre-NOI activities such as assessments of current conditions and trends as described under Modified Alternative A, as well as assessments of species of conservation concern and viability. Assessments under current rule procedures include analyses of management

situations (AMS) and benchmark analysis. Alternative A required assessments of unit contributions within the context of a broader-scale landscape. Previous analyses of planning costs (USDA Forest Service 2002a) found that consideration of broad-scale assessments can have a large impact on overall assessment costs.

Assessment costs were estimated to account for 19 percent to 28 percent of plan revision costs for the 2000 and 2002 planning rules (USDA Forest Service 2002a), and a similar percentage (19 percent) is projected for this proposed rule, decreasing to 9 percent under current rule procedures. Cost percentages during plan maintenance periods decrease to approximately 8 percent for both alternatives.

The Modified Alternative A (final rule) places more emphasis on rapid assessments using existing information to assess relevant ecological, economic and social conditions, trends, and their relationship to the land management plan within the context of the broader landscape. Modified Alternative A would eliminate the requirement for notification of an assessment and instead require responsible officials to coordinate or provide opportunities for the public and others to provide relevant information to contribute to the assessment. Modified Alternative A removes explicit requirements for assessments to address roles and contributions and monitoring questions. As a result of the changes in rule language, Modified Alternative A would reduce analysis time, and better frame the scope, scale, and intent of assessments. It would eliminate need to notify scientists. Assessment cost for Modified Alternative A is estimated to be about 25% lower than Alternative A.

Analysis/Decisions

These costs cover primarily post-NOI NEPA-related activities including effects analysis, public comment solicitation and content analysis, and alternative development. Costs also include timber (suitability) analysis requirements, comparison of alternatives, and documentation of decisions. Costs associated with evaluations of special or designated areas (e.g., wilderness) are assumed to remain constant across all alternatives and are not included in cost estimates.

Under the Modified Alternative A the requirements for amendments are simpler than those for plan development or revision. The rule allows amendments to be proposed without completing an assessment or the separate process step of developing a proposal. As a consequence, the level of effort (and resources) associated with amendments is expected to be reduced in many cases.

Projected analysis and decision costs account for 37 percent of plan revision costs under Alternative A, slightly lower than percentages previously estimated for 2000, 2002, and 2008 planning rules (47 percent to 58 percent) (USDA Forest Service 2002a, 2007b). Corresponding costs under Alternative B (current rule procedures) are estimated to be 47 percent of plan revision costs. Analysis and decision costs during plan maintenance are estimated to decrease to 14 percent and 33 percent for Alternative A and Alternative B respectively.

Under Modified Alternative A, the responsible official is required to review relevant information from the assessment phase to identify a preliminary need to change the existing plan when revising a plan. “Need to change” determinations are grouped with revisions and more prescriptive language regarding ecological sustainability, riparian sustainability, and BMPs for water resources. A slightly (2%) higher cost is estimated for Modified Alternative A than Alternative A.

Resolutions

Costs to address post-decisional appeals under Alternative B (current rule procedures) and pre-decisional objections under Alternative A account for 3 percent and 2 percent of plan revision costs respectively. These percentages are similar to those reported in previous planning cost analyses (USDA Forest Service 2002a, 2007b). Resolution costs are estimated to account for less than 1 percent of costs during plan maintenance periods for Alternative A, and 1.5 percent under current rule procedures. Estimates of agency costs do not account for litigation costs. The sources of information used to estimate planning costs, including past cost benefit analyses completed for previous planning rules, did not include litigation costs. Much of the litigation related to planning occurs at the project level, and it is not possible to separate out litigation costs for land management planning from other Agency expenses.

Monitoring

Monitoring costs are assumed to be represented by funds and expenses under the Agency’s NFIM budget line item. Historical expense and budget allocation data indicate that annual monitoring costs during plan revision and plan maintenance are similar and that monitoring funds directed toward planning range from 40 percent to 57 percent of non-monitoring funds (budget line item NFPN) for planning (USDA Forest Service 2002b, 2010a, 2010c). Monitoring costs during plan revision under current rule procedures are estimated to be 23 percent of non-monitoring costs and 21 percent under Alternative A. During periods of plan maintenance, monitoring costs as a percentage of non-monitoring costs increase slightly under current rule procedures and to a greater extent under Alternative A. Monitoring costs account for a similar percentage of total plan revision costs (17 percent to 19 percent) for both rules, which is similar to the percentage (13 percent) estimated in previous analyses for the 1982 procedures and the 2008 proposed rule (USDA Forest Service 2007b). Modified Alternative A Modified Alternative A changes the “unit” monitoring program in Alternative A to ‘plan’ monitoring program, and clarified the role of monitoring (as opposed to assessments) in determining the need to change. Monitoring is clarified for ecosystems and focal species. Monitoring cost for Modified Alternative A is estimated to be 5% less than Alternative A.

Cost Assumptions: Alternatives C, D, and E

Alternatives C, D, and E can all be considered to be modifications or refinements of Alternative A, whereby prescriptive requirements for the key planning activities are removed, adjusted, or augmented. As such, changes in Agency costs for these alternatives

are described, by planning activity, as qualitative or percentage changes with respect to Alternative A or Alternative B costs in the Agency Cost Impacts section below.

Alternative E: Scenario Building

Alternative E would require consideration of plausible scenarios as part of assessments conducted for plan revision. This approach likely would involve methods commonly referred to as scenario planning or scenario building. Those methods are not widely adopted in the Forest Service. That lack of familiarity would result in short-term cost increases associated with training necessary to learn the methods. That investment, however, is expected to produce possible long-term gains in efficiency. At local units, similar need to develop skills would add short-term cost and effort to transition periods as forests start to apply scenario planning. Because scenario planning is "story like," it is a natural way for people to talk about possible futures and alternative responses to different circumstances (Schoemaker 1993). Other agencies, such as National Institutes of Health, the U.S. Army Corps of Engineers (USACE), and Department of Defense, have processes for scenario planning that are accepted as effective approaches to identifying, communicating, and characterizing plausible futures where uncertainty is high and risks are profound. (Peterson et al. 2003). Examples include scenario applied to space defense (Huntley, Bock, et al 2010), the future of internal medicine (Hemmer and Costa, et al 2007), and scenario-based strategic planning (USACE 2010).

Scenario planning is a method for strategic planning that focuses on identifying multiple, reasonably plausible futures. While these multiple futures can be thought of as analogous to multiple forecasts, true scenario planning seeks to describe multiple plausible futures and does not seek to establish probabilities associated with those futures. The emphasis on plausibility instead of probability is overlooked by some disciplines that have embraced the terminology of scenarios without understanding the origins of scenario planning. Emphasis on probabilities reinforces a problematic search for a single best answer (Mitroff and Linstone 1995), a problem the founders of scenario planning sought to address (Van Der Heijden 2000). Searches for single best answers reflect cognitive and heuristic biases that scenario planning is designed to avoid (Schoemaker 1993, Selin 2006). This difference between emphasizing plausibility and emphasizing probability complicates the need to develop new skills because those trained in natural resource sciences are taught about probabilistic methods. Some of the new skills needed require rethinking fundamental training, which is an especially challenging demand.

Scenario planning is different from many other approaches to strategic planning. Approaches that are more traditional focus first on establishing a single-point forecast, often in the form of desired conditions. Those methods then focus on identifying probabilities associated with different alternatives for moving from current to desired conditions. Scenario planning, in contrast, was developed in part as a way to offset cognitive biases to which those traditional methods are often prone, such as bounded decision models, overconfidence, and deterministic reasoning (Chermack 2004, Van Der Heijden 2002). The method relies heavily on collaborative engagement between participants—including but not exclusively technical experts and scientists—so that biases and assumptions are brought to the surface and used to construct the plausible

alternative futures (Ringland 2002, Schoemaker 1993). Traditional approaches to strategic planning typically pit competing perspectives against each other in search for a single best forecast or scenario, occasionally looking for multiple single-point forecasts. In contrast with scenario planning, traditional methods are fundamentally adversarial and, therefore, at odds with more collaborative, learning-oriented approaches of planning and decision-making (Chermack and Lynham 2006). Scenario planning, while promising, requires consideration of plausible scenarios, which, by extension, requires the skills to develop those scenarios. Implicitly, developing the skills would be a required organizational investment; developing the scenarios would be a required investment of the local unit, its stakeholders, and its other interested participants.

